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# REDUCING FOOD WASTE IN RETAIL STORES



WAR FOOD ADMINISTRATION  
FOOD DISTRIBUTION ADMINISTRATION

JAN 26 1944

REDUCING

1000 WASTE

IN BOTTLE

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## REDUCING FOOD WASTE IN RETAIL STORES



Food, whether rationed or not, is a weapon of war for all the people. It is as important to save food from

preventable waste in the retail store as to produce it in the fields and to take it from the sea. Perishable foods are either a source of possible high profit or of substantial losses and annoyance to the retail merchant. Their care is important. But the merchant is handicapped, among other things, by insufficient or inexperienced help. To assist him and his helpers in conserving the more perishable foods, this pamphlet was prepared.

## FRUITS AND VEGETABLES

The food store merchant's responsibility begins when the goods are received.

### RECEIVING THE GOODS



Lift or carry containers of fresh produce. Don't drag or slide them along the floor. This is particularly important for vegetables in sacks, such as potatoes, cabbage, or rutabagas.

### STORING RESERVE STOCKS

Store sacks or other containers of apples or potatoes on an open slat framework about 3 inches high to permit ventilation and to avoid transfer of floor moisture or low temperature to the stored goods. Tiers of containers should be separated by 3 or 4 inches to allow ventilation.

### AVOID BRUISING



Carefully stack perishable fruits and vegetables in lugs on the cleated edges of the boxes. This is especially important for peaches, pears, plums, sweet cherries, apricots, and tomatoes.

Pile bushel baskets of apples, grapes, peaches, or other fruits on the edge of adjoining baskets, not on the lids or bulging tops of baskets directly beneath.

### STACK ON THE FLAT SIDE

Apples, citrus fruits, cantaloups, and other fruits and vegetables are often received in boxes or crates which are packed bulging so as to hold their contents firmly. Stack these cases upon their flat sides, not on their small ends (except crates of oranges); don't stack them with weight resting upon the bulging top or bottom as this will bruise or smash the contents.

## THAWING FROSTED PRODUCE

When produce is received in cold weather, open cases for immediate inspection after they are brought from the cold out-of-doors into the warmer surroundings of the store. Don't place such merchandise close to a radiator or other heater. If produce is frosted, thaw it out immediately in a relatively cool room. This thawing may cause the food to sweat. When paper fruit wrappers are wet from defrosting or any other cause, remove them promptly and wipe the fruit dry to avoid mildew or other rapid spoilage. Place tangerines received in moist condition in a cool, dark room until dry, as sunlight or heat will cause rapid spoilage.



## CARE IN HANDLING AND STACKING

In handling and stacking certain fruits and vegetables care is highly important to minimize spoilage. Don't pile cantaloups and other kinds of melons more than two deep in reserve storage for ripening. Open a crate of asparagus or celery *from the side* so that the contents may be removed by the butts or stalks and not by the easily damaged tips or leaves. Crates of pineapples should likewise be opened at the side or bottom so that the pineapples will not be lifted from their container by pulling on the spears.

## AVOID SUDDEN CHANGE OF TEMPERATURE



Certain types of fruits and vegetables should not be subjected to sudden change of temperature but kept as cool as possible under normal store conditions. After they have been displayed don't place apricots, berries, cantaloups, cherries, fresh figs, cranberries, pears, and sweet corn in the refrigerator or the produce cooler, at any time, as they may sweat and sustain rapid breakdown after such chilling.



## PROPER VENTILATION

Certain vegetables, especially beans, peas, spinach, and other greens, heat in display racks and should be fluffed or turned occasionally to permit cooling and ventilation. Various styles of slatted and open-base wooden racks for proper ventilation can easily be constructed to "dummy up" the display space above the counter or display-window base. These racks can be arranged to permit cool air to move, from a basement shaft or from a cool air duct, underneath the several displays and up through the loosely piled stock. Such ventilation adds surprisingly to vegetables' keeping qualities.

**SPREAD OUT AT NIGHT** to avoid heating, such produce as beans, beets, sweet corn, greens (collards, dandelion, kale, mint, mustard, chard, watercress), peas, radishes, rutabagas, summer squash, and parsnips.

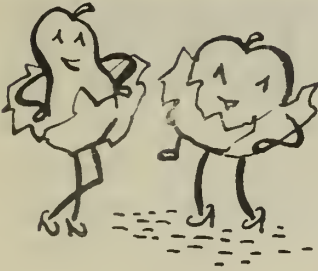
## OVERNIGHT CARE

Not all stores are equipped with a produce cooler or satisfactory overnight storage for vegetable stocks. Some retailers carry vegetables overnight in a large barrel containing water and provided with drainage space at the bottom and with supports such as a bushel-basket cover placed on a cheese ring. Successive layers of vegetables are covered with chopped ice. Obviously, the larger and heavier bunched vegetables and cabbage are placed at the lower levels, then celery, and sweet corn with the silk ends down. Parchment or waxed paper is put over the heads of cauliflower; the stems are placed in ice and the heads kept dry. More fragile and perishable produce is put in cloth bags or nets and placed at the top of the barrel. A metal tub or close-fitting cap is turned over the barrel.





## DISPLAY IN ORIGINAL WRAPPERS



Some fruits and vegetables should be displayed for sale in their original paper wrappers except for a few samples that should be partly wrapped. This is especially desirable for apples, citrus fruits, avocados, eggplants, pears, and quinces.

## DISPLAY PRODUCE UPON PROPER TYPE OF BASE

Stand asparagus on a bed of damp moss or on a clean, damp sack. Place the following products upon a soft background of excelsior, paper wrappers, or sacking: Avocados, bananas, pineapples, pears, persimmons, tomatoes, and peaches. Many fruits and vegetables of a highly perishable nature should be lifted carefully out of the cases, piece by piece, when building displays. Roll, don't drop, less tender products, such as small oranges or cooking apples, out of the side of the container onto the display pile.

## CUSTOMER DAMAGE



Handling and consequent damage by customers may often be held down by separating products according to their degree of ripeness. Separate avocados, tomatoes, cantaloups, berries, pears, peaches, and other products, and label them according to their degree of firmness or readiness to eat.

## HIGHLY PERISHABLE COMMODITIES

Sell, as quickly as possible during the first day of handling, such highly perishable commodities as berries, cherries, and fresh figs. Thin-skinned fruits dry and shrivel rapidly unless they are kept out of drafts. Don't make displays of cherries, peaches, pears, apricots, berries, and bananas near a drafty doorway or under a ceiling fan.

*Don't mix* the preceding day's produce with new merchandise. In many instances, it is much better to place older merchandise in separate displays and to clear rapidly at a reduced price; otherwise, the entire display will be unattractive, and rapid spoilage will result from the mixture of old and new goods.

### INGENUITY IN SELLING

Special selling effort may move goods that would otherwise spoil. Cauliflower with wilted leaves should be broken up and the curd or flower sold from an open container. Similarly, green peas or lima beans whose pods have wilted may be shelled and sold in that form. When tops of carrots, beets, turnips, and rhubarb have wilted or become slimy, cut them off and sell these vegetables.



Sometimes a portion of a partly spoiled product may be cut off and saved, as in the case of watermelons. Use saved halves of oranges, lemons, grapefruit, or avocados to display the quality of the stock. The cut surfaces of such products, as well as of hubbard squash and watermelon that are sold in portions, should be carefully covered with trans-

parent paper or cellophane, both for protection and for appearance sake. Improve the appearance of cucumbers and watermelons by rubbing them carefully with a rag moistened with salad oil and wiping dry.

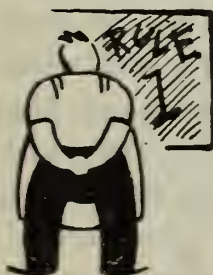
## MEATS

### AVOIDABLE MEAT SPOILAGE

With sharply limited supplies, the turn-over of meats, when available, is especially rapid. Yet spoilage may occur through oversight or carelessness or because of lack of knowledge on the part of inexperienced help. Stocks of less familiar cuts or specialties may spoil before they can be sold.

This outright waste is only part of the loss suffered by the dealer, for under rationing he cannot collect coupons for spoiled meats and his next month's supply of meats is correspondingly shortened.

### RULE ONE FOR PREVENTING SPOILAGE



Keep all meats in the cooler or refrigerator display case as much of the time as possible. Place carcasses, quarters, or large pieces fairly far back in the cooler and space well apart so that good ventilation will prevent stickiness. See that coverings are dry on wholesale cuts of beef, veal, and lamb. Avoid the waste of making new hook holes by replacing meats carefully in the cooler.

### VARIETY MEATS

Refrigerate hearts, livers, kidneys, brains, and sweetbreads constantly. Drain the liquids regularly from their display pans to prevent the meat from becoming "sour." Odds and ends of meats should be held in the display case, not in the cooler.

### GROUND MEATS

Soon after receipt, sell the rough cuts (such as plates, flanks, necks, breasts, and shanks) while fully palatable, or use for patties or hamburger. Ground meats require



special attention, as their extremely exposed surfaces encourage action of bacteria and rapid spoilage. If the meat grinder is not inside the refrigerator, remove and place the grinder head in the cooler between periods of use.

**TRANSFER** meat stock to the cooler at night with sheets of parchment or wax paper between cuts carried over, so as to minimize discoloration and rejection. The cut ends of smoked hams should be similarly covered, but boiled or baked hams are better not covered.



### CURED MEATS

Smoked meats require continuous refrigeration in the summer to prevent rapid drying out. They should not be held at temperatures above 55° F. If surface mold forms because of variations in temperature, rub it with lard and wipe off with a clean cloth. If the mold has penetrated the surface trim away the affected parts and discard the cuttings. Stickiness must frequently be wiped from pork cuts and sausage. Don't allow bacon to sweat and then chill it, as it may lose flavor and become rancid, even though its appearance may not be affected. It is definitely stale when the fat becomes discolored. Cured meats should not be placed in contact with fresh meat, as the chemicals used in curing will discolor fresh meat. Moisture from freshly killed meats may deposit on chilled cut meats and produce a slimy effect.

### FRESH AIR

Ventilation must be maintained fully inside the display case—among the several meat displays, between the bottom of the case and the racks on which the meat is displayed, and between the front glass in the case and the meat displays. Similarly, refrigerator shelves should not be covered with paper or other obstacles to the fullest possible ventilation as an aid to proper refrigeration.

CAREFULLY CLEAN display cases, platters, knives, saws, grinders, blocks and other equipment at least daily to control bacterial contamination. The meat cooler should be thoroughly cleaned at least once a week.

## FISH

### CARE OF FRESH SEA FOOD

Inspect shipments of fish and other sea food immediately after arrival. Fresh round fish should retain some of their natural slime, should show a clear skin, red gills, firm, clean-smelling flesh, and clear protruding eyes; it should have no odor about the gills or, if cut open, from inside the belly walls. Fresh fish in ice keep better after gutting. Frozen, round, or dressed fish should have the additional protection of a film of ice. Their skins should not appear dull or dry. There should be no strong, offensive odor.



### ICE BED FOR KEEPING FISH

Prepare a bed of several inches of finely chopped ice for the display of fresh fish, which may then be sprinkled with more ice. Proper drainage, however, must be maintained. If fresh fish are kept in a case overnight, bury them in ice, and pack the bellies of large, drawn fish with ice. No fresh fish should be carried in stock over the week end.

In warm weather, smoked fish should be kept in a meat refrigerator but not in contact with ice. Wrap smoked, salted, and cooked fish in cellophane, when obtainable, and inspect frequently. Dry salt cod may be safely displayed on top of the fish case except in warm weather. Keep the brine for pickled fish cool.

## DRY COLD FOR SOME FISH

Don't allow fillets or sliced fish to become water soaked for lack of proper drainage. Even away from ice, finnan haddie and fillets may become sticky unless kept dry. Apply dry cold to such fish as herring and halibut, to avoid mold.



Clams and oysters in the shell should be kept cool but not packed in ice. Keep shucked oysters away from direct contact with ice or ice water. But containers for opened clams, scallops, crab meat, and shucked oysters should be kept surrounded

with ice for at least three-quarters of their height. During the day, ladles and dippers should be kept in the containers in which used rather than laid aside on the ice or on counters where they may become dirty or infected. These ladles should be cleaned every night and morning.

Scrupulously clean conditions must be maintained in the display case. The counters, work tables, sinks, and drains should be carefully cleaned daily and disinfected frequently. Very small traces of overlooked waste material can easily contaminate fresh fish and sea food. Refuse should be placed in tightly covered containers and disposed of daily. Ice should not be re-used for a new supply of fish.

## POULTRY

### SPECIAL TREATMENT FOR SOME POULTRY

Before poultry which arrives dry-packed can warm up it should be placed immediately in the meat box. Drain cases must be well drained to prevent the birds from becoming water-soaked. Scalded poultry, especially, should be well iced, as otherwise the flesh cells tend to break down rapidly. Drawn poultry spoils more rapidly than undrawn.





Because milk-fed chickens and turkeys are very tender, they bruise easily and become easily infected. Poultry that is displayed in the salesroom for more than a few hours at a time becomes dry and spotty, and loses its fresh appearance. Place paper between adjoining birds when hung in the meat cooler, or otherwise they will become spotted when they touch each other.

## EGGS



Eggs lose weight, flavor, and quality when subjected to moderately high temperatures. Egg cases must be handled very carefully and stored with the top side up. For storage or display the temperature should range from 55° to 65° F.; the humidity should not exceed 75 percent. Keep eggs from heating equipment, direct sunlight, strong odors (such as fish, onions, oranges, lemons, soap, bulk cheese, oil, coffee, bacon, or smoked meats), or dampness which induces mold. Rotate stock rapidly.

## BUTTER, CREAM, AND MILK

### COOL TEMPERATURES NEEDED



Keep reserve stocks of butter in storage at a temperature of from 35° to 40° F. Don't display butter outside the cooler for more than 4 hours at a time—preferably at a temperature of 45° F. and never above 55° F.

Keep storage space sweet and clean at all times and provide plenty of cool air circulation. Keep butter away from sources of pungent odors, such as

garlic, onions, kerosene, fish, cured meats, or strong cheese. Handle margarine in the same way as butter. Cream and milk should be kept at from 40° to 45° F. but never above 50° F.

## CHEESE

### VARIANCE IN KEEPING TEMPERATURES FOR CHEESE

Store hard and semi-hard types of cheese at temperatures of from 50° to 55° F. Soft cheeses need lower temperatures - block cheese, 30° to 35° F., and Limburger, 40° to 45° F. Cream cheese and other soft types



should be kept well refrigerated at all times, in air not too dry, and should be sold within 3 days of receipt. No pin holes from price tags or other openings should be permitted in the foil covering of packages of such types of cheese.

Camembert and Liederkranz cheeses continue to ripen while in stock. Refrigerate and isolate them from cream types of cheese which absorb the odors. Processed packaged and loaf cheese of pasteurized types can be displayed safely without refrigeration, except in the warm months. Cheese preparations in glass jars do not require refrigeration unless the caps on the jars have loosened. Keep grated cheese dry and cool but not refrigerated, as it becomes lumpy with moisture or rancid with warmth.

### MOLD CONTROL

High moisture types of cheese, such as Muenster, Braumeister, Chantelle, Pot, Cream, Camembert, Liederkranz, Heidelberg, Limburger, Port du Salut, should be watched carefully in summer months to control development of mold.

## PROTECTION FOR CUT SURFACES

Cheese must be protected against evaporation from cut surfaces, especially in warm weather when cheese dries rapidly. Wrap sale sizes of cut bulk cheese in waxed paper (or cellophane when available) and inspect daily for mold. Cheddar cheese should have its cut surfaces wrapped and sealed for overnight storage. Make cuts on opposite sides of the cheese on alternate days unless the rate of sale is rapid.



## TO CORRECT SWOLLEN CHEESE

If an uncut Cheddar or daisy-type cheese becomes swollen in warm weather, puncture the rind in a number of places. Then turn the cheese upside down in a cool place until it returns to normal condition and will permit proper cutting without wasteful crumbling.

## SANITATION

Knives, wires, and other cutting implements used in handling cheese must be kept clean. Cases, tables, and counters on which cheese is cut and packaged should be washed at least weekly with pure soapsuds and disinfected with a borax solution, after which they should be carefully rinsed. Extra care and cleanliness are required to prevent infestation by cheese mites which must be controlled by immediate disinfection of infected equipment with a warm borax solution.

## CANNED AND BOTTLED FOODS

### DETERIORATION FROM HEAT AND SUNLIGHT

To prevent loss of quality or flavor, keep canned fruits (especially pineapple and grapefruit), and fruit juices





(including grape juice and tomato juice) cool and dry and away from heating equipment and direct sunlight in store windows and from overhead skylights. Canned shrimp should be similarly treated, since in either heat or sunlight it breaks down in texture and may flake. Di-

rect sunlight causes rapid deterioration of various meat products and shelled nuts packed in glass.

**CONDENSED MILK** requires cold, dry storage, as heat darkens it, makes it lumpy, and spoils its flavor.

#### FATS AND OILS



Olive oil, salad oils, French and other salad dressings, sandwich spreads, peanut butter, preserves, and jams and jellies, should all be kept out of direct sunlight and away from extremes of temperature, to avoid a rancid condition, separation of ingredients or other marked deterioration. Keep French

and other salad dressings and sandwich spreads above 40° F. and do not refrigerate them. They should have rapid sales turn-over.

Beverages, flavoring extracts, and vinegar deteriorate in direct sunlight.

Horseradish should be kept in a cool place.

Honey tends to crystallize if subjected to extreme cold, and may be rejected by customers. Comb honey and honey butter should be refrigerated.

## DRIED PROCESSED FOODS AND CEREAL PRODUCTS

### CARE OF DRIED FRUITS

Dried peaches, pears, apricots, prunes, apples, raisins, once the boxes have been opened, must be kept from warm storage or window display, shielded against loss of moisture, and protected against absorption of odors from other articles and against insect pests. Dried vegetables in bulk, (peas, navy and lima beans, lentils) paste type cereal products (macaroni, spaghetti, noodles), and corn meal should be displayed or stored in a cool, dry place to avoid mold.



### PROTECTION FROM WEEVILS

Dried foods and cereals need careful watching. Frequent cleaning of all shelving and of the outside of packages is necessary to avoid infestation by weevils or other insects. Store flour (especially the self-rising type) on clean, dry shelves away from heat and dampness and free from strong odors. Yeast requires cold storage. Crackers, biscuits, and breakfast cereals deteriorate rapidly from heat, humidity, and dampness and may be seriously damaged if handled roughly. They are easily tainted by strongly odorous materials such as soap, strong cheese, kerosene, or garlic. They also require thoroughly clean surroundings, with protection against insects.



### PRODUCTS REQUIRING SPECIAL CARE

To avoid crushing the under layer of bakery goods or popping open their end seals, don't pile them too high. Such goods should not be displayed in direct sunlight, since it may cause moisture to condense inside their wrappers and produce soggy, even moldy conditions.

Displaying them in a draft or near a heater speeds their drying out.

Protect gelatin desserts from heat because it destroys their flavor, and from dampness because it causes them to cake in spite of their protective wrappers.

Dry and kibbled dog food should not be stored in a hot, humid, unventilated place or near heaters, as heat and dampness may cause mold.

## MISCELLANEOUS FOODS

**BULK TEA AND COFFEE** absorb foreign odors readily.

**BULK PICKLES**, chow-chow, olives, and sauerkraut should be kept carefully covered in their brine at all times to prevent drying or darkening, or otherwise spoiling. Refrigerate sauerkraut at from 36° to 38° F.

### CANDY



Don't subject supplies of chocolate or chocolate candy to sudden changes of temperature. Sudden heat may cause the cocoa butter in them to separate and rise and may produce an objectionable gray discoloration or powdering. Other types of candy, such as coconut candy and creams, tend to harden and toughen if they become too cold.

All types of candy should be protected from excessive humidity and dampness. Don't crush soft pieces like gum drops by piling the displays too high.

### DEHYDRATED FOODS

Dry soup mixes and dehydrated foods in general should be protected from high-temperature storage, from high humidity or direct moisture contact, and from insect infestation. Plentiful ventilation is desirable.



# Uncle Sam says: CUT SPOILAGE LOSSES

## WAR FOOD ADMINISTRATION FOOD DISTRIBUTION ADMINISTRATION

FRUIT:	Keep Out of Sun	Keep Cool	Keep Dry	Shake up to Allow Air to Reach	Provide Proper Ventila- tion	Spread Out at Night	Sprinkle Fre- quently	Remove Rots Promptly	Must be Sold Promptly (1 to 2 days)	Handle Gently Avoid Bruising	MISCELLANEOUS
Apples	x	x	x		x			x		x	If damp, remove wraps and wipe dry
Apricots	x	x	x					x	x	x	Keep out of air currents
Avocados	x	x	x						when ripe	x	Do not put in refrigerator
Bananas	x		x		x					x	Do not put in refrigerator
Berries	x	x	x	x				x	x	x	Do not put in refrigerator
Cantaloups	x	x	x		x	x				x	Do not put in refrigerator
Cherries	x	x	x					x	x		Do not put in refrigerator
Coconuts	x	x	x								Keep stem end up
Dates and Figs	x	x	x					x	x		Do not put in refrigerator
Grapefruit	x	x	x					x			If damp, remove wraps and wipe dry
Grapes	x	x	x		x				x	x	Divide bunches with scissors
Lemons	x		x		x			x			If damp, remove wraps and wipe dry
Limes		x	x								May be kept fresh in refrigerator
Melons	x	x	x						x		Store in dark place
Nectarines	x				x					x	
Oranges	x		x		x			x		x	If damp, remove wraps and wipe dry
Peaches	x		x		x						
Pears	x	x	x		x			x	x	x	Do not put in refrigerator
Pineapples	x		x					x	x	x	Keep out of air currents
Plums and Prunes	x	x	x		x			x	x	x	
Watermelon	x				x	turn over			x		Cover cut melons with cellophane or waxed paper
VEGETABLES:											
Asparagus	x		tops only						x		Trim butts. Stand in shallow water or moss
Beans	x	x	x	x	x	x					
Beets			tops only	x	x	x					Trim tops as needed
Broccoli		x	x		x			bruised leaves	x		Remove blooms. Stand in cold water if wilted
Brussels Sprouts		x					x		x		Keep on cracked ice for display
Cabbage					x		x	x		x	Store in dark room
Carrots		x		x		x	x				Trim tops as needed
Cauliflower	x		x		x	x				x	Do not stack; avoid bruising
Celery		x			x		x				Trim butts. Revive in ice water
Corn	x	x	x		x	x					Strip outer husks only; cut windows through husks of a few ears
Cucumbers	x	x	x							x	Do not put in refrigerator
Eggplant		x	x						x	x	
Greens (cooking or salad)	x	x		x	x	x	x		x		
Lettuce	x	x					x		x		Trim butts and leaves as needed. May be kept fresh in refrigerator
Mint	x	x		x	x	x	x		x		
Mushrooms	x	x	x							x	Avoid sunlight or chilling
Onions (dry)	x	x	x		x				early crop		
Onions (green)	x		tops only		x	x				x	Trim tops as needed; trim butts
Parsley	x			x	x	x	x				Soak in cold water if wilted
Parsnips	x	x	x			x				x	
Pears	x	x	x	x	x	x					
Peppers	x	x	x	x		x			x		
Potatoes	x	x	x		x			x		x	
Radishes	x	x	tops only			x	x				Trim tops as needed
Rhubarb		x	tops only				x				If stalks wilt, trim thin slices off butts and stand in water
Spinach	x	x		x	x	x	x				
Squash			x		x					x	
Tomatoes	x	x	x					x	when ripe	x	Keep out of air currents; make shallow displays
Turnips		x	tops only		x						

Needless losses in fresh fruits and vegetables may be avoided if handlers will

- (1) *Unload Carefully* -- don't throw or drop containers
- (2) *Stack Carefully* -- too much weight on box bulges or on containers at bottom of stack soon starts spoilage
- (3) *Open Carefully* -- there's a right way to open every box or crate; the wrong way leads to needless bruising of products

